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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/075,008	02/13/2002	Dayong Chen	8194-593	7141
20792	7590	06/01/2005	EXAMINER	
MYERS BIGEL SIBLEY & SAJOVEC			TRAN, KHANH C	
PO BOX 37428			ART UNIT	
RALEIGH, NC 27627			PAPER NUMBER	
			2631	

DATE MAILED: 06/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/075,008

Applicant(s)

CHEN, DAYONG

Examiner

Khanh Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,5,6,8-11,15,16,19-21,25,26,29 and 30 is/are rejected.
- 7) ☒ Claim(s) 3,4,7,12-14,17,18,22-24,27 and 28 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>02/13/2002</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-2, 5-6, 8-11, 15-16, 19-21, 25-26 and 29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen U.S. Patent 6,775,521 B1.

Regarding claim 1, Chen invention is directed to a method for identifying a bad GSM speech frame based on a joint use of four signal quality metrics frame CRC parity check, estimated burst signal-to-noise ratio, estimated frame bit error count, and stealing flag values of frame.

Chen does not expressly teach the steps of *preliminarily classifying the received information signal* and *further classifying the received information signal* as set forth in the application. However, discussions in Chen teachings indicate that there is a preliminary step in which through simulations, it is highly likely that the frame can be determined bad based on certain criteria. The following discussions will establish a prima facie case of obviousness based on Chen teachings.

In column 3 line 25 through column 4 line 35, figure 1 illustrates a GSM radio telephone in accordance with the methodology for bad frame indication (BFI). The received radio signal is captured and passed to a demodulator, which

demodulates and converts the radio signal to a baseband digital signal. An equalizer 16 digitally processes the received baseband, which is a sequence of GSM data bursts as shown in figure 2. A ratio of estimated signal power and estimated noise power (ESNR) is computed for each burst and output to the bad frame indication (BFI) calculation 20. The equalizer also outputs stealing flags 24 of the burst 30 which are output to the BFI calculation 20. In light of the foregoing teachings, the process of equalizing the receiving signal after demodulation produces an ESNR and stealing flags 24, which correspond to the claimed "*at least one feature of the received information signal*".

In column 4, lines 45-65, Chen teaches that simulations verify that if the stealing flag metric is less than a given stealing flag threshold and the EBEC metric is less than an EBEC threshold then it is highly likely that the frame is bad because the receiver cannot distinguish whether speech was sent, signaling data was sent, or the burst is pure noise due to cessation of transmission during DTX mode. The bad frame corresponds to the claimed truncated burst. In view of that, because the teachings teach through simulation that the burst can be classified as bad frame due to the comparison result of stealing flag metric and EBEC metric with threshold values, it would have been obvious for one of ordinary skill in the art at the time of the invention that the aforementioned teachings would correspond to the claimed step of "*preliminarily classifying the received information signal as containing normal burst or truncated burst as set forth in the application claim*".

In column 4, line 65 via column 5 line 40, see also figures 3 and 4, the methodology 40 is used further for obtaining estimated frame bit error count EBEC metric, and CRC flag, corresponding the claimed step of *"cyclic redundancy checking the received information"*.

Identifying the bad GSM speech frame is based on (e.g. EBEC metric, stealing flag metric, EBEC metric, ESNR) if any of the conditions are true as described in column 5, lines 25-35. Hence, the aforementioned teachings correspond to the claimed step of *"further classifying the received information signal as set forth in the application claim"*.

Regarding claim 2, in column 4, lines 48-65, Chen teaches that the transmit burst can be purely noise due to cessation of transmission during DTX mode. The foregoing teachings correspond to the claimed transition rule for normal bursts.

Regarding claim 5, computation of frame bit error count as taught by Chen encompasses the claimed feature *"estimated bit error rate"*.

Regarding claim 6, as recited in claim 1, simulations verify that if the stealing flag metric is less than a given stealing flag threshold and the EBEC metric is less than an EBEC threshold then it is highly likely that the frame is bad because the receiver cannot distinguish whether speech was sent, signaling data was sent, or the burst is pure noise due to cessation of transmission during DTX mode. Hence, bad frame can be

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determined by stealing flag and the EBEC metric. Further classification as claimed in the application is performed by using jointly signal quality metrics for BFI declaration, one of the jointly signal quality metrics is CRC decoding as shown in figure 3.

Regarding claim 8, claim 8 is rejected on the same ground as for claim 2 because of similar scope.

Regarding claim 9, claim 9 is rejected on the same ground as for claim 1 because of similar scope.

Regarding claim 10, claim 10 is rejected on the same ground as for claim 2 because of similar scope.

Regarding claim 11, claim 11 is rejected on the same ground as for claim 1 because of similar scope. Figure 2 includes a demodulator and equalizer for producing ESNR and stealing flags 24. Simulations as discussed in claim 1 performs as a preliminary classifier. Figure 3 further shows a CRC decoder 46. BFI calculation in figure 2 corresponds to the claimed second stage classifier.

Regarding claim 15, claim 15 is rejected on the same ground as for claim 5 because of similar scope.

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Regarding claim 16, claim 16 is rejected on the same ground as for claim 6 because of similar scope.

Regarding claim 19, claim 19 is rejected on the same ground as for claim 11 because of similar scope.

Regarding claim 20, claim 20 is rejected on the same ground as for claim 12 because of similar scope.

Regarding claim 21, claim 21 is rejected on the same ground as for claim 11 because of similar scope. Chen teachings apply to wireless receiver, which receives GSM frame.

Regarding claim 25, claim 25 is rejected on the same ground as for claim 15 because of similar scope.

Regarding claim 26, claim 26 is rejected on the same ground as for claim 16 because of similar scope.

Regarding claim 29, claim 29 is rejected on the same ground as for claim 21 because of similar scope. Chen teachings apply to wireless receiver, which receives GSM frame.

Regarding claim 30, claim 30 is rejected on the same ground as for claim 2 because of similar scope.

### ***Allowable Subject Matter***

2. Claims 3-4, 7, 12-14, 17-18, 22-24 and 27-28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Jyrkka U.S. Patent 5,936,979 discloses "Method For Frame Quality Detection And A Receiver".

Balachandran et al. U.S. Patent 5,881,105 discloses "System And Method For Non-Sequential Transmission Of Control Signals Within A Speech Transition".

Jokinen et al. U.S. Patent 6,038,238 discloses "Method To Realize Discontinuous Transmission In A Mobile Phone System".



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4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh Tran whose telephone number is 571-272-3007. The examiner can normally be reached on Monday - Friday from 08:00 AM - 05:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Khanhcong Tran 05/27/2005  
Examiner KHANH TRAN